Using Multiple Research Methods to Investigate the Effectiveness of a Teacher Professional Development Programme

Titien Soebari, Curtin University, tsoebari@yahoo.com.au

Abstract
This paper reports on a study that used learning environment scales to evaluate the effectiveness of a teacher professional development programme in Indonesia. The study employed a multi-method approach that involved the collection of both quantitative and qualitative data. The quantitative component involved a pre-post design in which a survey was administered to a sample of 2,417 students (drawn from 66 classrooms in 32 lower secondary schools). The qualitative component involved six case study teachers and two of each of their classes, information were gathered using teacher and student interviews, classroom observations and teacher reflective journals. The quantitative results indicated that the pre-posttest changes in student scores were likely too small to be of educational significance. The themes that emerged from the data gathered using qualitative methods, however, helped to make sense of the lack of sizable changes in student scores before and after the professional development was introduced.

Introduction
In the history of education, the professional development of educators has been given prominence in proposals and plans for educational reform and school improvement programmes (Guskey, 2000). Historically, the evaluation of teacher professional development programmes has been limited to exit surveys which, notably, fail to examine the impact of the professional development efforts on students’ learning. Despite the importance of professional development programmes in reform efforts, there are serious concerns about the effectiveness of professional development practice with much literature related to descriptions of past failures (Corcoran, 1995; Guskey, 2002; Guskey & Huberman, 1995).

This study aimed to overcome this shortcoming by using students’ perceptions of the classroom learning environment in addition to a qualitative data collected from in-depth case studies to evaluate the effectiveness of a year-long teacher professional development opportunity for lower secondary English teachers.

This study was located with the context of English classes in Indonesia. In Indonesia, English is a compulsory subject from the first grade of junior high school. The teaching and learning of English is a priority for the Ministry of National Education as well as for Indonesian students (Depdiknas, 2003). According to Indrajati Sidi (2008), learning English is considered, by Indonesian students, to be one of the most difficult subjects. In Balitbangdiknas’ (2009) report on the student results of the Ujian Nasional (a nationwide leaving examination) the average score for English language was low. These low scores suggest that the current teaching practices, used in English classes, may need to be improved.
The Indonesian government has recently changed the focus of school improvement projects to ensure that the quality of learning is improved to support the improvement of students’ outcomes. With respect to English language teaching in Indonesia, many of the problems associated with poor achievement are related to the teachers’ lack of command of the English language (Katharina, 2009). A critical issue, therefore, is to raise the teacher qualification standards to ensure good quality teachers.

The government of Indonesia has invested a great deal of effort to improve the quality education for its people over the years. It is generally accepted that these are an integral function of the government whose aim and responsibility is to provide quality education for the people of Indonesia. It is believed that the low quality of Indonesian human resources in the global work force is a result of the low quality of educational practices at the school levels. There are several forums available for those activities and one of them is MGMP (Musyawarah Guru Mata Pelajaran) – a forum for teachers teaching the same subject matter. The role of MGMP forum is to improve teachers’ competence and professionalism by enabling them to meet once a week to discuss problems and to share different topics on teaching and learning. MGMP provides opportunities for teachers who teach the same subject matter to share different activities such as workshops, in service trainings, seminars and lesson study.

Theoretical Background

**Teacher Professional Development**

According to Newmann, Rutter and Smith (1989), teacher professional development (often referred to as in-service training, teacher training and staff development) has historically been thought of as any formally planned activity intended to advance individual and collective staff members’ knowledge, skills, or expectations improve student learning. Teacher professional development is also defined as a process of continual intellectual, experiential and attitudinal growth of teachers (Richards & Farells, 2005). Guskey (2000) suggested that continuous teacher professional development is essential as the knowledge base in education is growing rapidly.

Teacher professional development programmes are generally designed to alter the professional practice, beliefs and understanding of school staffs towards an “articulated end” (Snow & Griffin et al., 2005). In most cases, the articulated end is improved student learning. By improving principals’ and teachers’ knowledge and skills in management, leadership, teaching and learning, and classroom climates this will, in turn, affect students’ achievement. Fullan (2001) noted that, as long as there is a need for improvement, there will be the need for staff development.
Today, the approaches to investigating the effectiveness of teacher professional development programme have been developing. Killion (2002) explained that, in the past, evaluation of professional development has focused mainly on the documentation of the event. Guskey (2002) added that the documentation, to some extent, focused on the participants’ reactions to the programme (such as whether they liked the training, the quality of the presenter, and how the training met their needs). Evaluating a professional development programme should not only concern to evaluate the outcome, but also to consider the process itself, including following the implementation stages of the professional development, the identification of possible problems and the eventual diffusion of the innovation (Kennedy, 1988; Tribble, 2000). To this end, Guskey (2002) purports that the effectiveness of a professional development programme needs to be evaluated at five different levels: participants’ reactions, participants’ learning, organizational support and change, participants’ use of new knowledge and skills, and student outcomes. This study employed a combined quantitative and qualitative analysis of multiple cases to investigate the effectiveness of a teacher professional development in terms of student’s attitude and their perception of the classroom learning environment will be one such promising approach that can lead to valuable insights with practical significance.

**The Field of Learning Environment**

The classroom learning environment research has spanned more than three decades with significant contributions to the field of education. Associations between outcomes measures and classroom environment perceptions have been replicated for a variety of cognitive and affective outcomes, with a variety of instruments, across numerous countries and grade levels (Fraser, 2007). The consensus is that student perceptions of the classroom environment account for appreciable amounts of variance in learning outcomes, often beyond that attributable to background student characteristics (Dorman, 2008). In other words, students learn better when they perceive the classroom environment positively. Therefore, in order to stimulate and optimise student learning, knowledge of students’ perceptions of learning environment and how these factors influence their learning is crucial for both teachers and educational researchers.

Research in the field of learning environments has demonstrated strong and consistent associations between the classroom learning environment and student outcomes (Fraser, 2007) Despite the large body of literature in this field, however, relatively little systematic research has
been conducted on the effective evaluation of professional development on improvements in teaching and the learning environment (Biggs & Fraser, 2008; Gabler & Fraser, 2007).

Research in the field of learning environments has involved the development of a range of valid and reliable questionnaires to assess students’ perceptions of their teachers’ practices. These instruments have been successfully used as a source of process criteria in the evaluation of educational innovations in numerous studies (Fraser, 2007; Nix, Fraser & Letbetter, 2005; Gabler & Fraser, 2007). For example, a learning environment instrument was used to evaluate the Australian Science Education Project (ASEP) that revealed that ASEP students perceived their classrooms as being more satisfying and individualised (Fraser, 1979) compared with the control group. The significance of this evaluation is that classroom environment variables differentiated revealingly between curricula, even when various outcome measures showed negligible differences. For example, in 2008, Biggs and Fraser (2008) assessed the effectiveness of a teacher professional development programme by using two classroom learning environment instruments. Their results indicated that teachers who participated in the professional development programme were more successful in promoting a classroom environment in which there is more cooperation among students during the science/mathematics lessons. This study drew on and extended past research in the field of learning environment by using learning environment scales as valuable indicators for examining changes in teachers’ practices over the course of the professional development programme.

**Design of the Study**

In the present study, multiple research methods were drawn on and combined to help to evaluate the effectiveness of the professional development programme that was designed, in part, to improve the learning environment that teachers create. The mixed-methods approach used in the study involved collecting, analysing and integrating both quantitative and qualitative data in a sustained programme of inquiry (Creswell & Plano Clark, 2003). It is also an attempt to legitimate the use of multiple approaches in answering research questions rather than restricting or constraining the researcher’s choice. There has been considerable progress in combining qualitative and quantitative methods in the field of learning environment studies (Aldridge, Fraser and Huang, 1999; Tobin & Fraser, 1998).

The present study involved a pre-post design in which quantitative data were collected prior to the start of the professional development programme and then again at the end of the professional development programme. This provided a large-scale overview to help to determine whether
changes had taken place at the classroom level. In addition, the research also involved the gathering of qualitative information to provide in-depth information that would help to explain, clarify and contextualize the quantitative overview; thereby building on the strengths of both the quantitative and qualitative research methods (Cresswell & Clark, 2010).

**Sample**

The sample involved 138 English key teachers (*guru pemandu* - master teachers) who were merit selected to attend the in-service training and on-service workshops. These teachers were all considered to be exemplary in their own right and were each involved in the evaluation of the professional development programme. From the 138 teachers, 33 teachers and, 66 associated classrooms (2 taught by each teacher) were randomly selected and invited to participate in the pre-post component of the study. The questionnaire (described below) was administered to a sample of 2,417 (1,335 female and 1,082 male) Grade 7, 8, and 9 learners in English classes attending 32 state and private junior high schools spread across the province of Central Java in Indonesia. These schools were located in urban, semi rural and rural areas of Indonesia and were considered to be representative of schools in these areas.

The data collected using the questionnaires were then used as a starting point for further data collection involving different research methods including interviews with participants, observations and reflective journals. Of the 33 teachers who participated in the quantitative overview, six were selected as case studies to provide in-depth insights into teachers’ views of and involvement with the programme materials. For the case studies, purposive sampling was used to identify three categories of schools within the population that met specific criteria. The criteria for selection included; schools that were different from each other in terms of geographical location (i.e. rural, semi rural or urban), standard of school (i.e. regular, national and international), and the students’ socio-economic backgrounds. The decision to include schools that were different from each other was made to ensure that the data was varied and, therefore, making the results more generalisable, ensuring transferability of the results to other context or settings. The six case study teachers were drawn from regular schools (two teachers), national standard schools (two teachers) and international standard schools (two teachers). These teachers agreed voluntarily to participate further as case studies.

**Quantitative Data Collection and Analysis**

The What Is Happening In this Classroom? (WIHIC; Aldridge, Fraser & Huang, 1999) was selected for use in this study. The WIHIC questionnaire covering seven scales was originally developed for use in high school science classrooms (Aldridge & Fraser, 2000). Given the robust nature of the
WIHIC in a variety of settings and countries, it was considered suitable for use in the present study. In addition, the dimensions assessed using the WIHIC provide information from the students’ perspective about how learning opportunities are structured (i.e. Involvement, Investigation, and Task Orientation) and give a strong indication of the emphasis placed on student learning (Aldridge, Fraser & Huang, 1999).

Given that present study took place in high-school English classes, it was necessary to modify the WIHIC to ensure the suitability of items and scales. The word ‘English’ was added to each scale to remind the respondent to answer items in terms of his/her English class. For example “The teacher takes personal interest in me” was reworded to “The English teacher takes personal interest in me”. Also, the original WIHIC’s Investigation scale was omitted as this was not considered to be relevant to English classes. For the purpose of this study, a Finding Reference scale was developed to assess the extent to which students perceived that they were required to find information (such as checking a dictionary or using reference book). This scale was considered pertinent given some of the professional development programme sessions involved the development of material that enables teachers to utilise teaching resource books in designing worthwhile tasks.

The WIHIC was translated into Indonesian using the rigorous method of back translation, as recommended by Brislin (1970). This process involved a professional translator, who was fluent in both the English and Indonesian languages. This process involved the first author translating the instrument into Indonesian language and then a person conversant in both languages, but not familiar with the questionnaire, translating items back into English. The back translations were then checked by researchers to ensure that the Indonesian version maintained the meanings and concepts of the original version.

To ensure the reliability and validity of the instruments, the data were analysed to explore the factor structure, internal consistency reliability and ability to differentiate between the perceptions of students in different classes. To examine the internal structure of the modified version of the WIHIC, a principal axis factor analysis with Oblique rotation and Kaiser Normalization was conducted separately for the pretest and posttest data. To examine the internal consistency reliability for the seven WIHIC scales, Cronbach’s alpha reliability was calculated. To examine whether the seven WIHIC scales could differentiate between classes, ANOVA for class membership differences were used.
To determine whether differences existed in terms of students’ scores learning environment scales before and after the teachers participated in the teacher professional development programme, a one-way MANOVA was used. To estimate the magnitude of the differences (in addition to their statistical significance), effect size was calculated, as recommended by Thompson (2002).

**Qualitative Data Generation and Analysis**

To provide depth to the evaluation, qualitative data were gathered at various intervals during the one-year academic programme using classroom observations, teacher journals and interviews. The observations were conducted in the classes of the six case-study teachers. A minimum of 4 hours of observations were made in each of two classes of the case study teachers to help to determine the extent to which they utilised the teaching strategies proposed at the teacher professional development programme. In most cases, the researcher was a non-participant observer with limited interaction with the participants. All observations were video-recorded.

Interviews with each of the six case study teachers were conducted to examine their views about various aspects of the programme and their preference. These interviews provided insights into how the teachers responded to the professional development programme and their views on the programme’s effectiveness. Interviews were held with each of the case-study teachers at the beginning and end of each observation visit. The interviews ranged from informal to formal, but generally used a semi-structured format.

As part of the professional development programme, all teachers \( (N=138) \) were asked to keep a reflective journal in which they recorded their reactions to the programme as they implemented the strategies in their classrooms. The reflective journals included information about the teachers’ and students’ reactions to the strategies, whether the teacher felt that the strategies were worthwhile, the problems encountered and successes enjoyed. Participants were given time at the end of each day to record their journals. The six case-study teachers’ reflective journals were used as qualitative data.

In this study, analysis of the qualitative data began at the time of commencement of data collection and was continued on an ongoing basis until the end of the study. Analysis occurred as the researcher synthesised, sifted and selected relevant data from the field notes. Throughout the observation and interview process, constructions from both the teachers and the first author (who spoke Indonesian) were negotiated and refined to establish major themes.

**Findings**
Validation of the Instruments

Data collected from the students in 66 classes were analysed to investigate the reliability and validity of the Indonesian version of the modified WIHIC. Principal axis factor analysis with oblique rotation (selected because the dimensions of the learning environment can be considered to overlap) was used to generate orthogonal factors for each of the two data sets (pretest and posttest). The conventionally-accepted minimum value of 0.30 for factor loading to be meaningful was used (Stevens, 2002). The results indicated that 8 of the 56 items were problematic, these being Items 6 and 8 of the Student Cohesiveness scale, Item 16 of the Teacher Support scale, Items 17, 19 and 23 of the Involvement scale, Item 28 of the Finding Reference scale and Item 43 in the Cooperation scale. These items were omitted to strengthen the factor structure and were not included in any further analyses. The factor analysis resulted in the acceptance of a revised version of the instrument comprising 48 items in 7 scales (see Appendix 1), with all items for both data sets having a factor loading of at least 0.30 on their a priori scale with the exception of Items 7 and 49, for the pretest data set, which did not load on their own scales (Item 7 loaded on the Cooperation scale and Item 49 loaded on the Student Cohesiveness scale).

For the revised 48-item version of the WIHIC, the Cronbach alpha reliability coefficient (as an index of scale internal consistency and the ability to differentiate between classrooms (ANOVA) were also generated. The Cronbach alpha reliability coefficients for each of the 7 scales using the individual student as the unit of analysis, were high, ranging from 0.69 to 0.89 for the pretest and from 0.73 to 0.91 for the posttest (See Appendix 1). With the class mean as the unit of analysis, the alpha reliability coefficients were generally higher, ranging from 0.91 to 0.98 for the pretest and 0.92 to 0.98 for the posttest.

An analysis of variance (ANOVA) with class membership as the independent variable was used to examine the extent to which students within the same class perceive the classroom environment relatively similarly to each other, and yet vary from class to class. The results, reported in Appendix 2 indicate that each WIHIC scale differentiated significantly ($p<0.01$) between classrooms for both pretest and posttest.

Differences in Perceptions of the Learning Environment before and after the Teacher Professional Development

Differences in students’ perceptions (N= 2,417 matched pairs) of the learning environment before and after professional development programme were explored using a one-way MANOVA with
repeated-measures. The seven WIHIC scales were the dependent variables and the independent variable was the testing occasion (pretest and posttest) as the repeated-measures.

The simple comparison of the average item mean (scale mean divided by the number of items in that scale) and average standard deviation for each learning environment scale are reported in Table 1. The results indicated that the average item mean for all seven learning environment scales was higher for the posttest than for the pretest.

The results for the MANOVA, reported in Table 1, show that the $F$ ratio was statistically significant ($p<0.05$) for four of the eight scales (namely, Student Cohesiveness, Involvement, Finding Reference and Cooperation). To determine the magnitude of these differences and their educational importance, as recommended by Thompson (2002), the effect sizes were calculated (the difference between means expressed in standard deviation units). According to Cohen (1992), effect sizes ranged from small (0.10) to medium (0.25) to large (0.40). The effect sizes, displayed in Table 1, indicate that the magnitudes of the differences among classes for six of seven scales fall within the small range (ranging from 0.10 to 0.12 standard deviations) with exception being Student Cohesiveness which falls in the medium range.

Table 1
WIHIC- Average Item Mean, Average Item Standard Deviation, and Difference between Pretest and Posttest (Effect Size and MANOVA Results) Using Class Mean as the Unit of Analysis

<table>
<thead>
<tr>
<th>Scale</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Effect Size</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Cohesiveness</td>
<td>3.97</td>
<td>4.09</td>
<td>0.54</td>
<td>0.52</td>
<td>0.12</td>
<td>65.28*</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>3.37</td>
<td>3.41</td>
<td>0.71</td>
<td>0.72</td>
<td>0.03</td>
<td>3.77</td>
</tr>
<tr>
<td>Involvement</td>
<td>2.76</td>
<td>2.81</td>
<td>0.66</td>
<td>0.68</td>
<td>0.04</td>
<td>8.85*</td>
</tr>
<tr>
<td>Finding Reference</td>
<td>3.17</td>
<td>3.27</td>
<td>0.68</td>
<td>0.72</td>
<td>0.08</td>
<td>27.95**</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>3.98</td>
<td>4.02</td>
<td>0.60</td>
<td>0.60</td>
<td>0.03</td>
<td>3.91</td>
</tr>
<tr>
<td>Cooperation</td>
<td>3.38</td>
<td>3.51</td>
<td>0.66</td>
<td>0.67</td>
<td>0.10</td>
<td>45.81**</td>
</tr>
</tbody>
</table>
Using Qualitative Information to Help to Understand Quantitative Findings

Although students' scores on the learning environment survey were higher for the posttest than the pretest, the effect sizes indicate that the magnitude of these changes were generally small. Although this result was somewhat disappointing, qualitative information helped to explain the results and why the professional development programme may not have been implemented successfully at the classroom level.

Evaluation of the Professional Development Experience

Relevance and Utility of the Professional Development Programme

Analysis of the data gathered during interviews and through teacher reflective journals written by the case study teachers indicated that the teachers who participated in the teacher professional development programme were generally keen to improve their teaching and to develop themselves as teachers. All six of the case study teachers agreed that improving and continuous learning was important. To this end, one teacher stated, “I think that if teachers are not motivated to develop, they will be left behind because the knowledge and technology are developing all of the time”. Another teacher explained, “I am always keen to improve my teaching quality. In this world, information and technology develop very quickly and teachers are required to make adjustments with these development. It is important, therefore, that I work hard to improve my knowledge and teaching skills’. According to Guskey (2000), as the knowledge base in nearly subject area and academic discipline is growing rapidly, educators must keep abreast of this emerging knowledge and must be prepared to use it to continually refine their conceptual and craft skills.

The case study teachers also agreed that they gained new knowledge and skills as a result of participating in the professional development programme. The interviews indicated that these teachers found the content of the programme to be relevant, practical and useful. To this end, one teacher commented, “The professional development was very useful and the implications of this programme will help me to improve my teaching practices that will, in turn, improve my students’ learning”.

<table>
<thead>
<tr>
<th>Equity</th>
<th>3.89</th>
<th>3.93</th>
<th>0.72</th>
<th>0.73</th>
<th>0.02</th>
<th>2.93</th>
</tr>
</thead>
</table>

N= 2417 students in 66 classes present for both pretest and posttest
*p<0.05  **p<0.01
The case study teachers commented positively on the facilities provided during the teacher professional development programme. One teacher commented, “I think, in general, this teacher professional development is good, especially with the facilities provided in the programme; such as the accommodations, training rooms and media and refreshments”. As Guskey (2000) described, the context issues of the background and the current reality of the environment in which the professional development experience takes place are very important.

Analysis of teachers' reflective journals indicated that all of the teachers were enthusiastic about implementing the suggestions given during the programme. One teacher wrote: “In the programme, I received a lot of information about teaching strategies, the content knowledge of English, technology application in teaching and learning and modern teaching techniques. I am sure that my students will become highly interested in English if I implement these suggestions in my English classes”. Those teachers whom were interviewed agreed that the programme was a valuable opportunity for them to share ideas about teaching and learning with other participants. The teachers also found the experience of meeting with colleagues and sharing ideas and experiences to be rewarding and informative. One teacher commented:

> By participating in this teacher professional development, I have had an opportunity to meet many English teachers from different cities and it is valuable because I can share my ideas about teaching and learning and share our teaching resources.

This is in line with Richards et al's (2005) study, which found that the teacher professional development programmes were reported by teachers to be by far the biggest source of influence on their decisions, inspiring them to change their teaching and beliefs. As Doyle & Ponder (1977) and Fullan (2001) pointed out, when the content in the teacher professional development are practical and can be implemented immediately, the participants tended to comment more positively.

The interviews with case study teachers, however, indicated that there were two aspects which may have hampered the success of the professional development, these being: the calibre of two of the four trainers and the tight time schedule required to complete the professional development programme. Many of the participants whom were interviewed felt that two of the four trainers were not adequately prepared. The participants generally agreed that the presentations provided by these two trainers failed to provide participants with clear teaching suggestions and strategies or to explain the teaching materials adequately. To this end, one of the participants commented, “The
presentations were not satisfactory, the workshops were one way lectures and the tutors did not explain the materials clearly”. Another commented, “I am sure the trainers do not have enough knowledge about the new English curriculum and its implementation in the real English classes”.

The teachers who were interviewed also complained that the amount of time available to cover the content of the programme was too tight and that as a result, each day lasted for too long. The professional development programme was carried out over four days each semester, which each day starting at 8 in the morning and finishing at 10 in the evening. Participants’ interviews and reflective journals indicated that the majority of them suffered from fatigue and that the programme felt rushed. To this end, one participant stated, “The schedule of the programme was not effective and the workshop was rushed. It was not effective because we were very tired and of course we were not productive with the ‘overloaded materials’ in the very short time”.

**Contextual Factors that Influenced the Implementation**

Guskey (2000) suggested that the programme implementation at the classroom level influenced by contextual factors that should be evaluated at three levels: organisation support and change; participants’ use of new knowledge and skills and student learning outcomes. During this section, the focus of evaluation is on the organisation support and change and the constraints experienced by the individual teachers in the implementation efforts.

In the present study, classroom observations and interviews with teachers suggested that there were differences in the ways in which teachers implemented the suggestions provided during the teacher professional development programme. In those classes that were observed, the teaching tended to be teacher centred with few opportunities for discussions and cooperative learning among students. During our observations, we observed two teachers who tried to move away from the teacher-centred approach, but these occasions were few (two among 12 observations). It appeared that the constraints placed on the teachers as they implemented the suggestions of the PD programme differed. According to Guskey (2000), many improvement efforts in education fail simply because they are unclear or misleading about the kind of organisational support required for change. As a result, educators end up trying to implement innovations that they do not fully understand in organisations that do not fully support their efforts. The following section describes factors identified through in depth interviews with the case study teachers that influenced the implementation of teaching strategies that were encouraged during the professional development programme. These include: system-wide policies; provision of time; resource adequacy; and lack of support.
System-wide Policies
According to interviews with the six case study teachers, the importance placed on students' achievement in the nationwide leaving examination (Ujian Nasional) hindered the teachers' implementation of the teacher development programme's results. The scores attained in the nationwide final examination at the end of junior high school determines whether students are to be retained at the same level for another year or accepted into a senior high school (the higher level). In addition, those students with higher scores were more likely to be accepted into a 'star' senior high school (a school with outstanding results as measured by the number of students who enter a 'star' university). Although in 2006, the government had introduced the new outcome-focused curriculum, the teachers whom were interviewed indicated that, because of the leaving examination, they were unlikely to change their teaching practice and would remain focused on the development of academic ability. Interviews with the six case study teachers indicated that the government's strong focus on the national final examination could be a major influence on the learning environment created by the teachers. The majority of teachers whom were interviewed claimed that, in general, teacher's lacked knowledge of the new outcomes-based curriculum and this, coupled with the pressure on the final examination policy, lead them to use more examination-driven approaches and promote highly competitive learning activities. Teachers whom were interviewed explained that, because of the importance placed on these results, they were reluctant to use teaching methods that were not teacher-centred. One teacher commented:

When I try to use the new techniques, I have to think hard about the national test. Teaching year 9 students, I am focusing on preparing my students for sitting in the national leaving exam. I have to manage my limited time for the exam. I do not want to take risk. My students must perform well.

In some cases, educational innovations counteract existing policies defined by the government. Teachers who try to implement a new instructional method may discover that a government policy is contradictory to their efforts. These results have been found in other studies and are worth reporting (Teddlie & Reynolds, 2002; Aldridge, Fraser & Huang, 1997; Aldridge, Fraser, Taylor & Chen, 2000).

Provision of Time
The six case study teachers all agreed that time was a critical factor that affected the implementation of the new teaching strategies. The teachers all had a high teaching load that did not allow them to plan classes and materials which incorporated the techniques suggested in the teacher professional development programme. Two of the teachers said that often they did not do any planning before they went to teach, but rather they looked at the topic in their text books to be
done that day and decided what they would do when they went to the classroom. One commented that, “Sometimes, I do not have time to plan the lessons”. Another commented, “It will be very hard if I must plan the lessons as suggested by the PD, it takes time and my excessive workloads will not allow me to do that”. Three of the case study teachers who were teaching year 9 commented that the number of lessons per week and the pressure to cover the syllabus to meet the demands of the national public examination made it difficult to find the time needed to introduce the suggested techniques during the professional development programme.

**Resource Adequacy**

All six of the case study teachers involved in our study agreed that at their respective schools there was a lack of resources to support the activities suggested during the professional development programme. One teacher from a rural school commented, “My problem is that, if I want to implement a new technique in my classroom, I have no learning aid materials that are suitable”. Five of six case study teachers explained that textbooks and worksheets were not available and that those resources that were available were not in line with the new curriculum. A teacher from an urban school commented:

> Frankly, it is difficult to implement the professional development results into my classrooms. My problem is that I do not have any teaching resources that can be used to implement the techniques that were suggested. The professional development’s suggestions are ideal, I cannot implement them in my classrooms due to lack of the resources.

**Lack of Support**

During the interviews, the six case study teachers claimed that the support from the school leaders in their implementation efforts was in the form of “releasing” them to participate in the professional development. There were not practical supports for them during the process of implementation. It would appear that the school’s principal did not provide a conducive culture to change or the implementation of the professional development ideas. A teacher of a rural school claimed the support for change was lacking in his school and, to this end commented:

> In my case, my school culture must change first. To make sure that the process of implementation works well, the principal must initiate that. There is no sense of care from my principal for her teachers. The principal does not pay attention to the teachers who do their job well. She does not treat the lazy teachers differently. There is no support from my principal for the implementation of innovation. One day, when I asked for reference books for my students, my request was rejected.
Finally, those case study teachers who were teaching in rural schools felt that a lack of collegial support at their schools reduced their motivation to make changes to their teaching practices. One teacher commented:

Teaching in this school is actually challenging, especially if I try to introduce new ideas or consider my colleagues’ attitudes. One for example, I want to introduce English as the means of communication among teachers and staff, because you know that my school is prepared to become a national standard school, but my colleagues do not support this idea. I am not happy with this situation. They like making fun of my idea. I want to be an agent of change but my school culture is not conducive for it.

Conclusion
A major contribution of the study was the modification and validation of an instrument to assess students’ perceptions of their classroom learning environment (What Is Happening In this Classroom-WIHIC) scales in the Indonesian language. My study represents one of a relatively small number of studies to utilise learning environment instruments to evaluate the impact of teacher professional development project in Indonesia. From my study, it is clear that the WIHIC is valid and reliable instrument for use in lower secondary English classroom context. Results of my study further support the international reliability and validity of the WIHIC. Based on these results, future researchers will be able to use these instruments with confidence, knowing that they have been validated across grade levels, subject matters, and cultures, and with large sample size.

Using the sample collected from 2,417 students in 66 classes responding to the WIHIC, MANOVA with repeated measures (pretest and posttest) revealed the small difference in students’ perceptions of the learning environment before and after the teacher professional development programme that was indicated in the effect sizes found in this study. The study indicated the magnitudes of the differences among 66 class samples for two scales fall within low range (ranging from 0.10 to 0.12 standard deviations). These small effect sizes suggested that the educational importance of this difference is quite low.

Results of the qualitative data analysis, collected using six case study teachers, provided important information that supported the conclusions drawn from the quantitative data as well as provided causal information for the results. Data gathered during interview and from teacher reflective journals suggested that all of the participants involved in the teacher professional development programme perceived it as relevant and of utility. Although interviews also indicated that two of the professional development facilitators who conducted workshops were vague and disorganised, the teachers generally viewed the programme positively, as being fruitful and helpful in changing their views of teaching and learning. Despite the positive reports
provided by teachers during and after the professional development programme, however, observations of the classrooms were more congruent with those of the student responses and further supported the conclusion that the extent of change in learning environment was small. The classroom observations did not provide evidence of teachers using the new approach despite their expressing attitudes that were favourable to the approach. The vast majority of lessons that were observed were characterised by teachers lecturing and students answering narrow questions and transcribing information into their exercise books.

The comments of the case study teachers can be interpreted in terms of three main criteria. Firstly, the case study teachers all agreed that the need for students to do well in the examination prevented them from implementing the innovations that were intrinsically desirable. The teachers’ fear of failing to cover the examination syllabus, coupled with a tight time schedule and a high teaching load, all influenced the teachers’ decision to use teacher-centred approaches, and reject implementing the approaches suggested in the professional development programme. Secondly, inadequate resources and facilities as required, such as teaching resource books, worksheets and a language teaching room (language laboratory) impeded teachers use of the new techniques that were introduced in the programme. Thirdly, the lack of practical support from the principal and colleagues hindered the implementation of ideas and the teachers’ attempts to change their practices. This lack of support was heightened for the case study teachers who were teaching in rural schools who claimed that their colleagues neither encouraged them to learn about new ideas nor shared their enthusiasm.

While it is important that teacher professional development programme should address the needs of the teachers and build on their existing knowledge, this study suggests that teachers are more likely to implement new approaches when changes are effective to achieve the articulated end. In the present context, in which public examination and its syllabus critically influence the classroom practice, it is necessary to view the teaching approach and the pedagogic innovation by reference to the constraints with which teachers and students face in the classroom levels.

References


Appendix 1

Table 1
Factor Loadings for the WIHIC for Pretest and Posttest

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>SC Pre</th>
<th>SC Post</th>
<th>TS Pre</th>
<th>TS Post</th>
<th>IV Pre</th>
<th>IV Post</th>
<th>COP Pre</th>
<th>COP Post</th>
<th>EQ Pre</th>
<th>EQ Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I make friendships among students in this class.</td>
<td>0.58</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I know other students in this class</td>
<td>0.51</td>
<td>0.52</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>I am friendly to members of this class</td>
<td>0.44</td>
<td>0.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>Members of the class are my friends</td>
<td>0.62</td>
<td>0.65</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>I work well with other class members</td>
<td>0.32</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Students in this class like me</td>
<td>-</td>
<td>0.31</td>
<td></td>
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<td></td>
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</tbody>
</table>

**Student Cohesiveness (SC)**

**Teacher Support (TS)**

The teacher takes a personal interest in me
9

The teacher goes out of his/her way to help me
10

The teacher considers my feelings
11

The teacher helps me when I have trouble with the work
12

The teacher talks with me
13

The teacher is interested in my problems
14

The teacher moves about the class
15

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### Involvement (IV)
- I give my opinions during class  
  - My ideas and suggestions are used during classroom discussions  
  - I ask the teacher questions  
  - I explain my ideas to other students  
  - I am asked to explain how I solve problems  

### Finding Reference (FR)
- I look for references to test my ideas  
  - I am asked to find references for statements  
  - I look for references to answer questions coming from discussions  
  - I look for references to answer questions which puzzle me  
  - I find out answers to questions by looking for references  
  - I solve problems by using information obtained from references

### Task Orientation (TO)
- Getting a certain amount of work done is important to me  
  - I do as much as I set out to do  
  - I know the goals for this class  
  - I am ready to start this class on time  
  - I know what I am trying to accomplish in this class  
  - I pay attention during this class  
  - I try to understand the work in this class  
  - I know how much work I have to do

### Cooperation (COP)
- I cooperate with other students when doing assignment work  
  - I share my books and resources with other students when doing assignments  
  - I work with other students on projects in this class  
  - I learn from other students in this class  
  - I work with other students in this class  
  - I cooperate with other students on class activities  
  - Students work with me to achieve class goals

### Equity (EQ)
The teacher gives as much attention to my questions as to other students' questions.  
I get the same amount of help from the teacher as do other students.  
I have the same amount of say in this class as other students.  
I am treated the same as other students in this class.  
I receive the same encouragement from the teacher as other students do.  
I get the same opportunity to contribute to class discussions as other students.  
My work receives as much praise as other students' work.  
I get the same opportunity to answer questions as other students.

Factor loadings less than 0.30 have been omitted.
N= 2417 students in 66 classes

Appendix 2
Internal Consistency Reliability (Cronbach Alpha Coefficient) for Two Units of Analysis and ability to Differenciate Between Classrooms (ANOVA Results) for the WIHIC the WIHIC for Pre-test and Post-test

<table>
<thead>
<tr>
<th>Scale</th>
<th>Unit of Analysis</th>
<th>Alpha</th>
<th>Reliability</th>
<th>Mean Correlation Pretest</th>
<th>Posttest</th>
<th>ANOVA eta2 Pretest</th>
<th>Posttest</th>
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</thead>
<tbody>
<tr>
<td>Learning</td>
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</tr>
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<td>Student</td>
<td>Individual Class</td>
<td>0.69</td>
<td>0.73</td>
<td>0.41</td>
<td>0.41</td>
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<td>0.92</td>
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<td>0.85</td>
<td>0.46</td>
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<tr>
<td></td>
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<td>0.96</td>
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\(N = 2417\) students in 66 classes at 32 schools